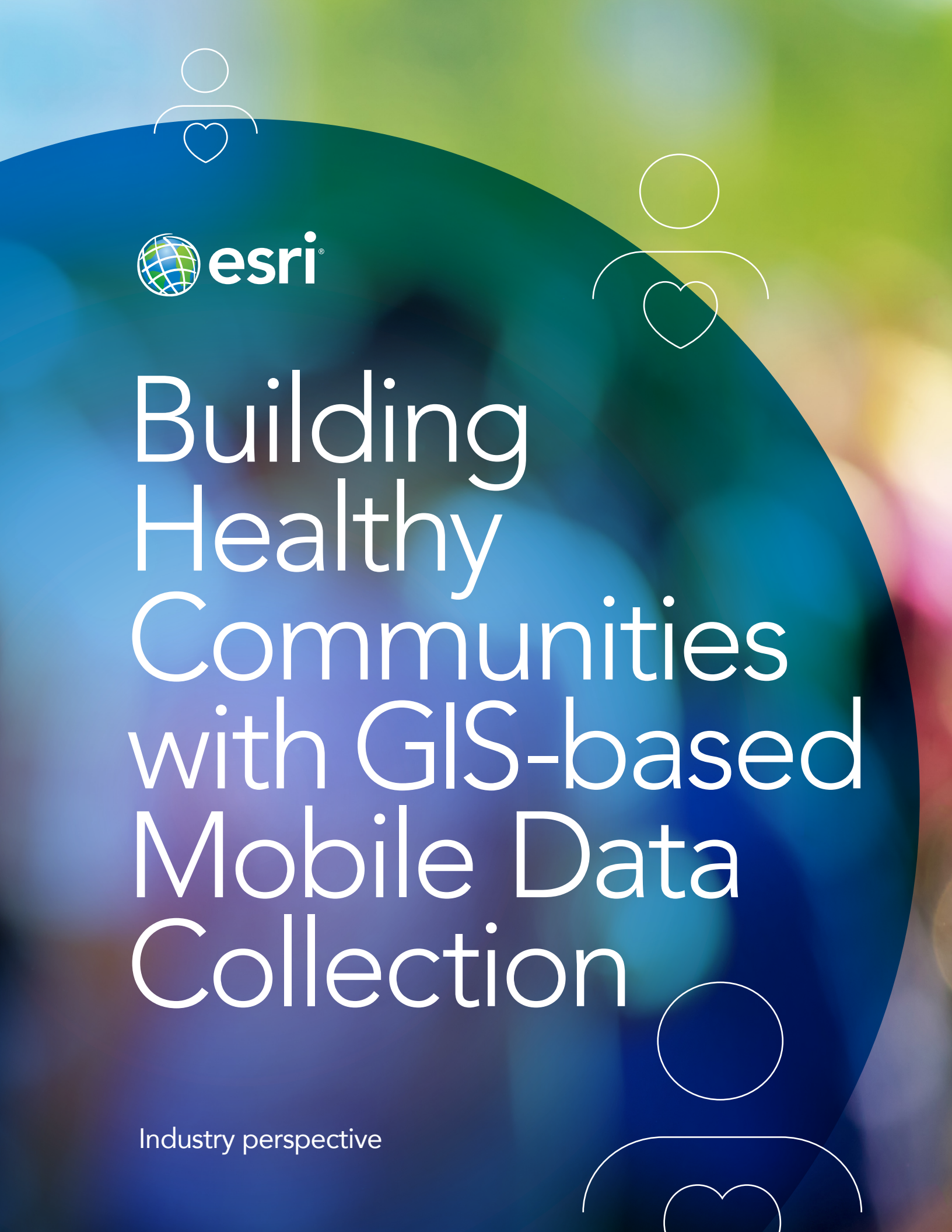


esri

Building Healthy Communities with GIS-based Mobile Data Collection

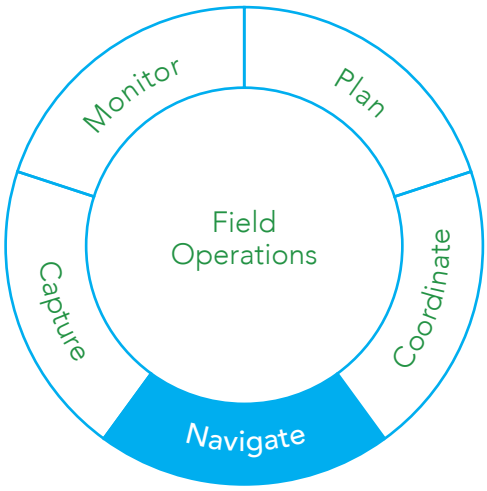
Industry perspective

Executive Summary

Geographic information system (GIS) technology helps the world better understand, respond to, and ultimately improve human health.

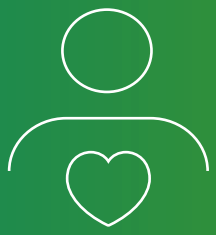
This is especially true with respects to mobile government. Geospatially enabled mobile solutions are differentiated by its ability to capture and store data at the source location which can be fed immediately into master database and operational dashboard in real time. This real time capability is changing the face health and human services workflows.

To facilitate improved productivity and efficiency in the field, Esri—the world leader in GIS—has created a suite of mobile solutions designed to work together to support the entire mobile workflow. The platform allows health and human services professionals to plan their work, coordinate activities, navigate for higher productivity, capture data in the field, and monitor progress back at the office.



What is being presented is a mobile strategy rather than unconnected workflows. One that offers the capability to collect authoritative information as a system of record. These configurable apps allow for a large amount of data collection purposes that are primed to capture the vital information that provides for a system of insight. The apps also connect to server and cloud-based tools that allow field workers and health professionals to immediately inform decision makers using a situational awareness tools for the ability to give a data driven response.

That's why GovLoop has partnered with Esri for this Industry Perspective about data collection and healthy communities. This report will show you how GIS-based data collection magnifies understanding of health issues by updating databases in real time and visually expressing that intelligence for analysis and sharper decision making.



The Power of Data Collection for a Healthy Community

A healthy community is one in which a diverse group of stakeholders collaborate to use their expertise and local knowledge to create a community that is socially and physically conducive to their health. The data that exists has the potential, when properly shared and organized, to help understand health problems and build healthy communities.

But today, the public sector faces the challenge of moving from a static model of data collection, analysis, modeling and planning, to a modernized approach of moving from real time data collection to action. Why? There exists a lack of best practices, standardization, experience, skills and technology about data use, as well as overly-siloed operations where departments do not share data – even within their own organizations.

Esri can help you overcome these challenges by providing scalable solutions that help organizations better understand how to apply GIS to the health of their communities. With Esri's technology, you can share data and collaborate across your program, department and organization. It is not only necessary to collaborate internally, but essential to connect with partners in the community such as education, city government, public safety and non-profits to lay the foundation for a healthy community.

Nowhere is this ability to share and connect data and information more evident than in Esri's ability to power GIS with field data collection.

Mobile data collection apps allows you to collect and process data out in the field, in your office, or in any other location – a truly powerful ability that allows you to reach your community where they are and where you need to be. Both online or offline, your workforce can access maps and collect and view real-time information.

With GIS software, you can bring data straight from the field into a geodatabase in a seamless workflow – and also take GIS data back into the field via collector mobile device or laptop computer. GIS software is customized to best meet your needs by optimizing the functionality needed to complete the task.

There are five apps Esri offers to help you with your community health efforts:

Collector for ArcGIS

Is an app that is map centric and targets field workflow needs. It collects and updates data by using location, filling out forms, and capturing media such as pictures and videos. It can be used to replace paper-based forms/processes and collect the location where each form is created. It also has the ability to edit offline.

Survey123 for ArcGIS

Is a simple and intuitive form-centric data gathering solution that makes creating, sharing and analyzing surveys possible in just a few easy steps. It lets a user design surveys in a spreadsheet, connect to upload surveys to ArcGIS, enable a workforce with the Survey123 for ArcGIS mobile app to capture answers in the field, and analyze answers from the field in ArcGIS to support decision making. Use the desktop tool to create a smart survey that is branded and styled before going in to the field. Once published to ArcGIS online and made available to surveyors, they can be completed on and offline. The Survey123 Dashboard allows you to see who and when surveys were submitted, view answers and perform analysis.

GeoForm

Is a configurable template for form-based data editing of a Feature Service. This application allows users to enter data through a form instead of a map's pop-up while leveraging the power of the Web Map and editable Feature Services. This will geo-enable data and support workflows by lowering the barrier of entry for completing simple tasks.

Operations Dashboard for ArcGIS

Gives you a real-time view and common operating picture. Stay on top of your operations by monitoring, tracking, and reporting on data feeds. With this application you can integrate maps, lists, charts, and gauges from your desktop or tablet and visualize data as it comes in from the field or other sources.

Navigator for ArcGIS

Is a mobile app that gets your field workforce where it needs to be, unlocking efficiency gains and improving reliability. Fully integrated with the ArcGIS platform, Navigator for ArcGIS works offline and in seamless interaction with Collector for ArcGIS. Field staff can search and navigate directly to your organization's assets, even if those assets are off the commercial street network. It can work using the data provided, your own custom data, or both. It can also receive stops directly from other apps, and provide vehicle modes to calculate the most efficient routes based on vehicle type.

Esri's mobiledata collection solutions offer the following benefits to those in the public sector working to make their community healthier:

- Increase the accuracy of data collection, ultimately increasing the quality and value of an enterprise GIS.
- Collect authoritative, historic and real-time data that are essential components to improving community health. Data accurately collected in the field allows the user to remain informed, operate with the most up-to-date information, and make better decisions based on reliable information.
- Turn staff and volunteers into data collectors by providing them with mobile applications where they can edit and publish information.
- Engage the community on progress of a project or allow them to be aware of any arising issues on their smartphones. Make sure to take advantage of these alternative sources of data by crowdsourcing and collecting it from citizens and field staff anytime, anywhere, on any device.
- By taking data collected in the field and combining it with operational data from other programs, departments or community partners, the user is able to better plan, monitor and understand the problem in a new context.

To learn more about data collection and its impacts on a healthy community in a real world, read how two governments used data collection and GIS to improve the health of their citizens.

Mobile Data Collection Impacting Health: Case Studies

Rancho Cucamonga: City Speeds Outreach, Curbs Homelessness with Mobile App

The challenge

The City of Rancho Cucamonga's Community Improvement department administers municipal codes to promote a safe and attractive environment. Part of the job includes working with the city's police department, which contracts services with San Bernardino County Sheriff's Department, to respond to reports on homeless encampments. While the city's senior community improvement officer and two police deputies work together to keep these areas clean, they also treat these reports as opportunities to help, rather than displace or arrest, homeless individuals. But with limited staff and resources – including differing agency systems that made it difficult to share data – they turned to GIS technology for a better solution. The three-person team needed a simple yet powerful tool that would streamline communication to help manage cases, connect the city's homeless population with critical resources, and better inform the public.

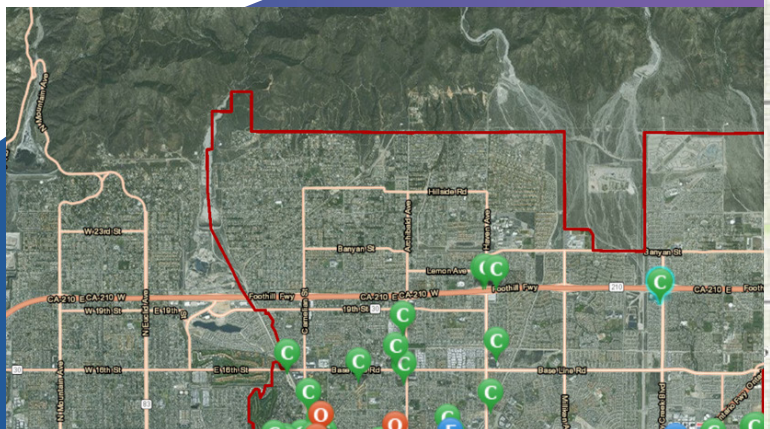
The solution

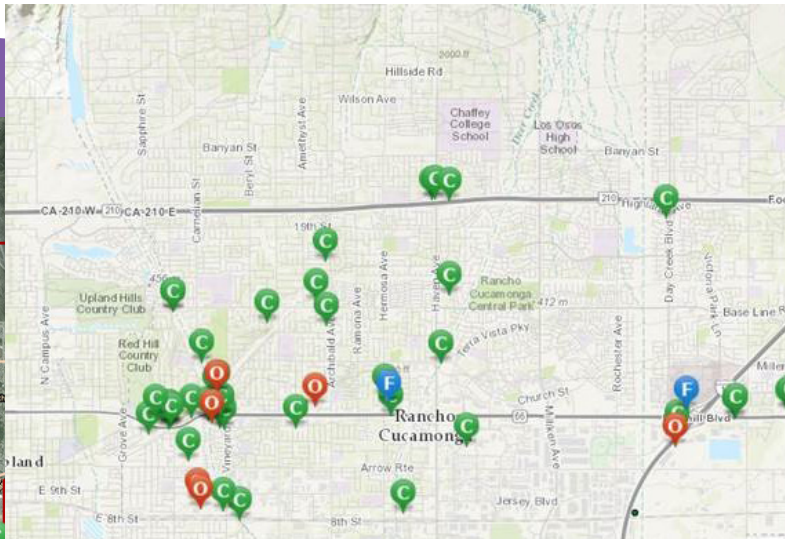
In just two hours, the city's GIS staff configured Esri's Collector for ArcGIS app to replace the pen-and-paper field survey. It's no longer an issue that team members have varying schedules and cannot be in the field at the same time. With the mobile app implementation, individual team members drop a pin on a map to create a new case and enter data about the area and homeless person. The app includes features for photos and notes and a simple form for entering all necessary case information. Using an automated feature, each user is notified when a new case is added in the system – whether it's from the field or a resident's call. They can now view where each case is located on the map and see each case status.

The outcome

The entire team saves time by having location and case information readily available. They're able to dispatch cleanup crews and outreach specialists faster. Collector for ArcGIS has also better equipped all city staff and management with the latest information on the city's homeless populations, helping them address residents' concerns and offer assistance to those in need.

Within one year of implementing Collector for ArcGIS, the city collected data on 58 encampments and closed 49 of them. The app also proved to be an effective tool for helping the county sheriff's Homeless Outreach and Proactive Enforcement (HOPE) team to connect homeless individuals with housing resources. As a result, the city developed a similar GIS tool for HOPE. The organization uses the app to track homeless populations and outreach efforts throughout San Bernardino County's 20,000-mile jurisdiction.





DeKalb County: Maps Locate Brighter Future for Homeless

The challenge

DeKalb County's Community Development Department provides affordable housing resources to the more than 700,000 residents who call the region home. Every other January, teams of hundreds of volunteers embark on an overnight mission to locate and count unsheltered homeless people living in DeKalb County, Georgia. Their goal: identify people in need and provide them with available resources to get back on their feet. The homeless Point-in-Time (PIT) count is mandated every two years by HUD and is fulfilled locally throughout the country. In preparation for DeKalb County's 2015 PIT count, the Community Development Department, in collaboration with Pathways Community Network Institute, planned to execute the census in the traditional fashion: equip boots-on-the-ground teams with paper surveys, pencils and clipboards. Volunteers would collect hundreds of data points about homeless persons, and then workers would manually enter the information from the paper surveys into spreadsheets. The data would take three or more full days to enter, and once complete, the team would have to cross-check the spreadsheet with volunteers' handwritten notes for errors. It was a lot of work, a lot of time and not efficient.

The solution

Initially in search of volunteers, the team consulted with the county's GIS department. What transpired was an idea to modernize the outdated paper survey by using the Esri ArcGIS platform and apply geography to discover new insights about homeless populations. The GIS team created a custom mobile application using GeoForm, an ArcGIS web application template. The mobile app digitized the original survey and introduced new information layers. Instead of handwriting demographic data and block-level location points of unsheltered people, volunteers entered the information via cell phones. They used the app to quickly enter demographic data in a custom form, upload photos and notes, and pinpoint the exact location of each surveyed person. Teams analyzed the information in real time with live web maps and determined where to dispatch additional volunteers to high-need areas.

The outcome

The ArcGIS platform helped volunteers collect reliable information faster and geolocate approximately 200 unsheltered homeless people down to the street level. The data was instantly available in spreadsheets and web maps, saving the county time and money by eliminating hours of manual data entry. Community development confirmed existing data on where unsheltered people live and located new people in need of housing assistance. DeKalb County can now employ the ArcGIS platform to track population patterns and trends over time to plan where and when to allocate services. With plans to expand the department's use of GIS, outreach workers are already utilizing the data to get people in need a home of their own.

Defeating Polio in Iraq

The challenge

The outbreak of polio in Syria and Iraq in late 2013 and early 2014 was described by a United Nations spokesperson as "arguably the most challenging outbreak in the history of polio eradication." Polio, a highly contagious disease that primarily afflicts children younger than age five, can lead to partial and sometimes fatal paralysis.

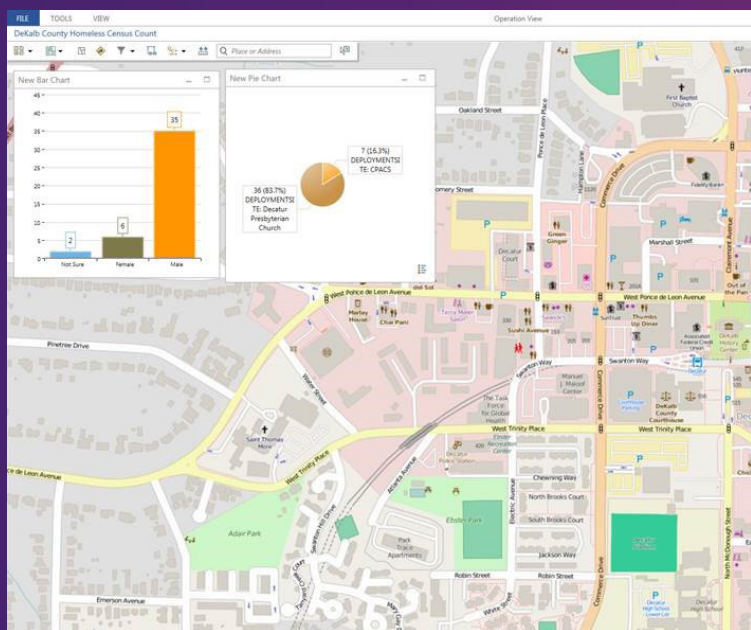
The solution

Surveys are designed to show whether vulnerable populations, such as internally displaced persons and refugees, are effectively reached. Collected data helps identify gaps—unvaccinated children and reasons for not vaccinating as well as hard-to-reach or unsecure areas. It locates primary healthcare centers, districts, and provinces responsible for children who did not receive the vaccination. Instead of paper surveys, which can take weeks to collect and process, the WHO field team in Iraq gathered real-time data using Survey123 for ArcGIS®, a mobile app from Esri.

Survey123 for ArcGIS is a simple and intuitive form-centric data-gathering solution that makes it easy to create, share, and analyze surveys. "Survey123 enables us to analyze and share data on a daily basis for action and follow up the next day by the Ministry of Health," said Wasan Al-Tamimi, a WHO technical officer.

The outcome

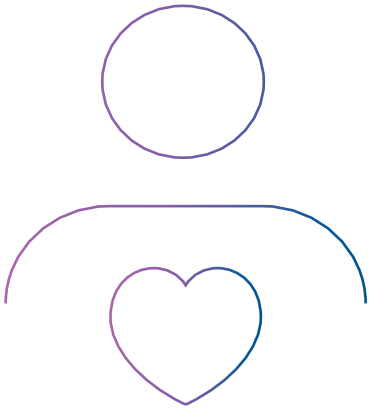
The app was installed on 150 Android® tablets (it also works on iOS and Windows devices). WHO survey teams reported on their experience with Survey123 for ArcGIS saying the app is user friendly, easy to handle, and simplifies data transmission. The team collected more than 60,000 polio surveys using Survey123 for ArcGIS and extended their use of the app to assess the cholera immunization campaign. According to Ravi Shankar, a technical officer at WHO headquarters, WHO offices in other countries have expressed interest in using Survey123 for ArcGIS in future field deployment activities.



Conclusion

Esri offers a mobile platform is helping to redefine the way governments approach health and human services workflows. Whether it is tracking health indicators, vector-borne disease, providing for homeless point-in-time count, or mobile field inspections, GIS is essential to move a community toward health and resiliency. The shift is from focused applications to developing a fully integrated mobile strategy. One that connects the field operations to the back office and enables more insightful decision-making.

To learn more about how to use Esri's mobile platform to help build a healthy community, visit go.esri.com/HealthyCommunities



When Esri was founded in 1969, we realized even then that geographic information system (GIS) technology could improve society. Working with others who shared this passion, we were encouraged by the vast possibilities of GIS. Today, our confidence in GIS is built on the belief that geography matters – it connects our many cultures and societies and influences our way of life. GIS leverages geographic insight to ensure better communication and collaboration.

Explore our website to discover how our customers have obtained the geographic advantage by using Esri software to address social, economic, business and environmental concerns at local, regional, national and global scales.

We hope you will be inspired to join the Esri community in using GIS to create a better world.

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GovLoop's mission is to inspire public sector professionals by serving as the knowledge network for government. GovLoop connects more than 250,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to the public sector.

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